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[REDACTED] THE JOHNS HOPKINS UNIVERSITY

Department of Physics
Baltimore, Maryland 21218

Grant NsG 193-62

[REDACTED]
Semi-Annual Status Report for Period
August 1, 1965 - January 31, 1966

Prepared by: Wm. G. Fastie

1. Administrative Reorganization

The sudden death in August 1965 of Professor G. H. Dieke, Chairman of the Department of Physics and Research Contract Director of the subject grant, has not only forced a major change in the administration of the grant but a partial change in the nature of the research work carried out under the grant.

Mr. Wm. G. Fastie, who has been in charge of the field research program, has been appointed Research Contract Director. Dr. Donald E. Kerr is now providing scientific liaison with the Physics Department, and Dr. Leon Madansky, Chairman of the Physics Department, is providing broad administrative supervision, particularly in the area of integrating the research work under the grant with the overall Physics Department program. In the research area, Assistant Professor H. Warren Moos has become involved in the conception and performance of field experiments. Dr. John Doering, Assistant Professor of Chemistry, has initiated a program leading to studies of electron densities in the aurora and day airglow. The spectroscopy laboratory work is now under the direction of Dr. H. M. Crosswhite, who has previously been closely associated with that area of the research.

2. Field Program

One rocket experiment was performed during the report period on October 21, 1965 in an attempt to get the far u. v. spectrum of the comet Ikeya-Seki. Drs. Moos, Crosswhite, Doering, and Fastie participated in this effort. Visual inspection of the spectra obtained did not reveal any features that could be associated with the comet, and computer reduction of the data has not been completed. The experiment did obtain good information on the solar spectrum and the possibility of coronal features will be examined when the computer work is completed.

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One ground based instrument was used by Mr. R. Crabbs at Fort Churchill in September, 1965, to support experiments of the Geophysical Corporation of America. Spectra of upper atmosphere chemical releases were obtained. Our major purpose in cooperating in these experiments was to determine operational problems associated with such measurements in order to make it possible to produce better instruments under the special fund provided in the grant for the development of ground based spectrometers.

Dr. Wm. Partlow and Mr. R. Crabbs participated in the NASA airborne expedition out of Honolulu to observe the comet Ikeya-Seki. Spectra obtained on this mission were substantially negative, but the mission provided firsthand reports to the rocket experiment at Wallops Island in support of that effort.


3. Laboratory Program

Dr. Raymond E. Miller has completed his studies of the Vegard-Kaplan and Lyman-Birge-Hopfield bands of molecular nitrogen. The final results of this work have been issued as Technical Report No. 9, and have been published in the Journal of Molecular Spectroscopy

Dr. H. M. Crosswhite and Mr. Albert Williams are developing wavelength and intensity standards for the vacuum u. v. region. This work includes studies of the iodine, iron, germanium and silicon spectra.

A specially designed double u. v. monochromator has been put into operation and has been used down to 2000 Å to obtain absolute calibration of detectors with the use of an NBS calibrated tungsten filament lamp.

4. Technical Reports

1. R. E. Miller, "High Resolution Emission Vegard Kaplan Bands of Nitrogen" J. Chem. Phys. 43, 1695 (1965).
 2. R. E. Miller, "The absolute Energy of the $A^3\Sigma_u^+$ State of Nitrogen." Accepted for publication in the J. Mole Spectroscopy.
 3. R. E. Miller, "A Method for Obtaining Ultra-Pure Nitrogen.", Submitted for publication to J. Vacuum Sciences and Tech.
 4. A. Williams and Wm. G. Fastie, "Atomic Oxygen and N_2^+ Day Airglow Measurements in a Javelin Rocket." Presented in August 1965 at the Goddard Symposium. To be published as a Technical Report.
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Technical Reports (Cont'd)

5. R. E. Miller and Wm. G. Fastie, "Atomic Oxygen Day Airglow Emissions in the May 30, 1965 Eclipse. " Presented at Ames Research Center Symposium in December, 1965. To be published as a Technical Report.

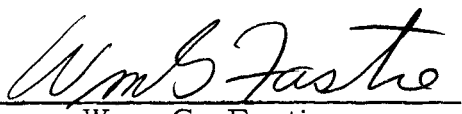
5. Scientific Personnel

G. H. Dieke (deceased August, 1965)
Wm. G. Fastie (part time)
Donald E. Kerr (part time)
H. W. Moos (part time)
H. M. Crosswhite (part time)
J. Doering (part time)
R. E. Miller, Research Associate
Wm. Partlow, Research Associate (part time)
R. Hussain, Research Assistant (part time)
A. Williams, Research Assistant (part time)
W. Carter, Research Assistant (part time)
M. Chedester, Research Engineer
R. F. Crabbs, Research Engineer

6. Fiscal Report

A fiscal report has been sent from the business office.

WGF:imk


Wm. G. Fastie
Research Contract Director